

**FAIRCHILD DIGITAL**

**TTL**

**COUNTERS (Cont'd)**

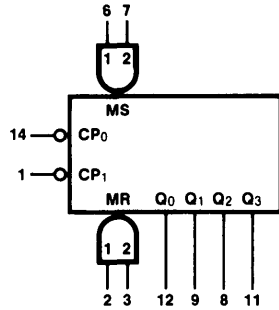
| It m | Function      | DEVICE NO.          | Modulo              | Parallel Load* | Clock Transition | Max Clock Rate<br>MHz (Typ) | Clock to Q Output<br>Delay-ns (Typ) | Power Dissipation<br>mW (Typ) | Logic/Connection<br>Diagram | Package(s) |
|------|---------------|---------------------|---------------------|----------------|------------------|-----------------------------|-------------------------------------|-------------------------------|-----------------------------|------------|
| 1    | Synchronous   | <b>93L16</b>        | 16<br>Presettable   | S              | ┘                | 23                          | 26                                  | 85                            | D127                        | 4L,7B,9B   |
| 2    | Synchronous ✓ | <b>93S16</b>        | ✓ 16<br>Presettable | S              | ┘                | 90                          | 90                                  | 410                           | D127                        | 4L,7B,9B   |
| 3    | Synchronous   | <b>54/74160</b>     | 10<br>Presettable   | S              | ┘                | 32                          | 17                                  | 315                           | D127                        | 4L,7B,9B   |
| 4    | Synchronous   | <b>54LS/74LS160</b> | 10<br>Presettable   | S              | ┘                | 45                          | 15                                  | 95                            | D127                        | 4L,7B,9B   |
| 5    | Synchronous   | <b>54/74161</b>     | 16<br>Presettable   | S              | ┘                | 32                          | 17                                  | 315                           | D127                        | 4L,7B,9B   |
| 6    | Synchronous   | <b>54LS/74LS161</b> | 16<br>Presettable   | S              | ┘                | 45                          | 15                                  | 95                            | D127                        | 4L,7B,9B   |
| 7    | Synchronous   | <b>54/74162</b>     | 10<br>Presettable   | S              | ┘                | 32                          | 17                                  | 315                           | D128                        | 4L,7B,9B   |
| 8    | Synchronous   | <b>54LS/74LS162</b> | 10<br>Presettable   | S              | ┘                | 45                          | 15                                  | 95                            | D128                        | 4L,7B,9B   |
| 9    | Synchronous   | <b>54/74163</b>     | 16<br>Presettable   | S              | ┘                | 32                          | 17                                  | 315                           | D128                        | 4L,7B,9B   |
| 10   | Synchronous   | <b>54LS/74LS163</b> | 16<br>Presettable   | S              | ┘                | 45                          | 15                                  | 95                            | D128                        | 4L,7B,9B   |
| 11   | Up/Down       | <b>54LS/74LS168</b> | 10<br>Presettable   | —              | ┘                | 32                          | 15                                  | 100                           | D83                         | 4L,6B,9B   |
| 12   | Up/Down       | <b>54LS/74LS169</b> | 16<br>Presettable   | —              | ┘                | 32                          | 15                                  | 100                           | D83                         | 4L,6B,9B   |
| 13   | Up/Down       | <b>54/74192</b>     | 10                  | A              | ┘                | 30                          | 30                                  | 325                           | D129                        | 4L,7B,9B   |
| 14   | Up/Down       | <b>54LS/74LS192</b> | 10                  | A              | ┘                | 40                          | 30                                  | 85                            | D129                        | 4L,7B,9B   |
| 15   | Up/Down       | <b>54/74193</b>     | 16                  | A              | ┘                | 30                          | 30                                  | 325                           | D129                        | 4L,7B,9B   |
| 16   | Up/Down       | <b>54LS/74LS193</b> | 16                  | A              | ┘                | 40                          | 30                                  | 85                            | D129                        | 4L,7B,9B   |
| 17   | Up/Down       | <b>54/74190</b>     | 10                  | A              | ┘                | 25                          | 20                                  | 325                           | D130                        | 4L,7B,9B   |
| 18   | Up/Down       | <b>74LS190</b>      | 10                  | A              | ┘                | 40                          | 20                                  | 90                            | D130                        | 7B,9B      |
| 19   | Up/Down       | <b>54/74191</b>     | 16                  | A              | ┘                | 25                          | 20                                  | 325                           | D130                        | 4L,7B,9B   |
| 20   | Up/Down       | <b>74LS191</b>      | 16                  | A              | ┘                | 40                          | 20                                  | 90                            | D130                        | 7B,9B      |

\*A = asynchronous, S = synchronous

FAIRCHILD LOGIC/CONNECTION DIAGRAMS

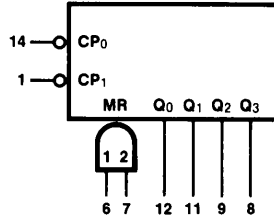
DIGITAL - TTL

**D121**  
54/7490A, 54LS/74LS90



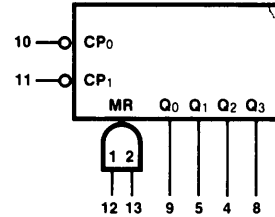
VCC = Pin 5  
GND = Pin 10  
NC = Pin 4, 13

**D122**  
54/7492, 74LS92



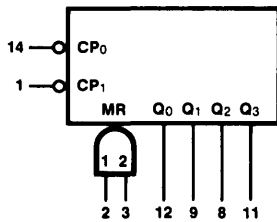
VCC = Pin 5  
GND = Pin 10  
NC = 2, 3, 4, 13

**D123**  
54/74293, 54LS/74LS293



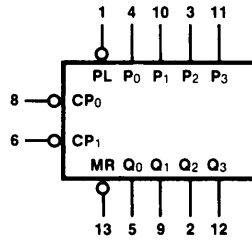
VCC = Pin 14  
GND = Pin 7  
NC = Pins 1, 2, 3, 6

**D124**  
54/7493A, 54LS/74LS93



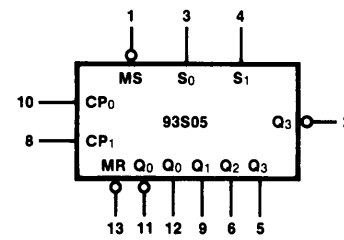
VCC Pin 5  
GND = Pin 10  
NC = Pins 4, 6, 7, 13

**D125**  
54/74176, 54/74177,  
54/74196, 54LS/74LS196,  
54/74197, 54LS/74LS197



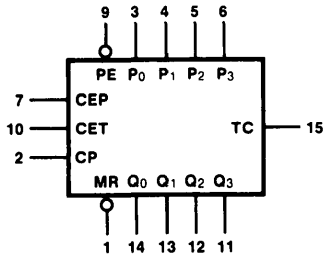
VCC = Pin 14  
GND = Pin 7

**D126**  
9305, 93S05



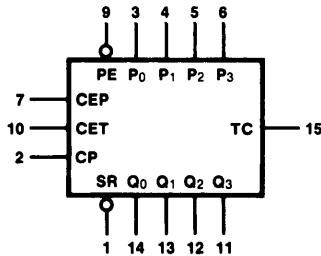
VCC = Pin 14  
GND = Pin 7

**D127**  
9310, 93L10, 93S10,  
9316, 93L16, 93S16  
54/74160, 54LS/74LS160,  
54/74161, 54LS/74LS161



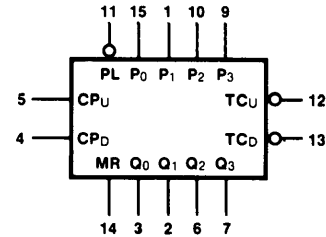
VCC = Pin 16  
GND = Pin 8

**D128**  
54/74162, 54LS/74LS162,  
54/74163, 54LS/74LS163



VCC = Pin 16  
GND = Pin 8

**D129**  
54/74192, 54LS/74LS192,  
54/74193, 54LS/74LS193



VCC = Pin 16  
GND = Pin 8